THE

JOURNAL OF GAS LIGHTING.

PUBLISHED QUARTERLY.

WITH AN INTERMEDIATE SUPPLEMENT ON THE 10TH OF EACH INTERVENING MONTH.

No. 10.] LONDON, NOVEMBER 10, 1849. [SUPPLEMENT { Price 4d. Stamped. „ 3d. Unstamped.

JOHN BARLOW begs respectfully to acquaint Directors and Managers of Gas and Water Works, and his Friends in general, that his BUSINESS is TRANSFERRED from the Wenlock Iron Works to the larger and more commodious Premises of Messrs. H. and M. D. Grissell, REGENT'S CANAL IRON WORKS, EAGLE WHARF-ROAD, LONDON, by whom he has been appointed AGENT; and where he trusts he may be favoured with a continuance of the patronage with which, for more than a quarter of a century, himself and his predecessors have been honoured.

A large assortment of Retorts, Pipes and Connections, Lamp-posts, Tubing, Borings, and every other similar article required for the use of Gas and Water Works, will be kept in stock; and contracts for Tanks, Gasholders, Roofs, Purifiers, Valves, &c., and Gas Works complete, executed on as advantageous terms as by country manufacturers. Machinery of all sorts, Mill Work, and Town Castings, made on the shortest notice.

London, September, 1849.

CLEGG'S New Patent Gas Meter.—LONDON—24, REGENT-SQUARE.

In these Meters the varying height of the water makes no difference in the measure.

PRICE OF STATION METERS.

To measure	60,000	cubic feet	per 24 hours	£50
„	120,000	„	„	75
„	240,000	„	„	100
„	500,000	„	„	150
„	1,000,000	„	„	250
„	2,000,000	„	„	400

CARTER'S Patent Safety Gas Valve or Main Cock.—Experience has demonstrated the superiority of this Invention as a substitute for the common Main Cock, which is so soon out of order, either becoming fixed or leaky, neither of which is likely to occur with these Valves. They have been several years in use in many of our largest establishments: in the Bank upwards of one thousand are fixed, where, as elsewhere, they are highly approved.

Many of the Gas Companies have adopted them for their Street Lamp Cocks, and thereby prevent the possibility of waste.

They are manufactured of all sizes, from 2-8 to 12 inches bore, and are cheaper than any other description of Cock now in use.

THOMAS LAMBERT and SON,

Patentees, corner of Short-street, New-cut, Lambeth; Manufacturers of Block Tin Tube, and every description of Gas, Steam, and Hydraulic Apparatus.

PATENT FLEXIBLE GAS TUBING.

JAMES LYNE HANCOCK'S Vulcanized Indiarubber Hose Pipes and Tubing. Manufactory (and Warehouse), Goswell-mews, Goswell-road, London.

Gas Companies, Engineers, Gas Fitters, and the Trade generally, are respectfully informed this Tubing is now manufactured to any size, from ¼ inch bore and upwards, in 100-feet lengths, and perfectly cylindrical, either with or without a spiral wire inside.

VULCANIZED GLAZED FLEXIBLE TUBING, from ¼ inch up to 1 inch diameter, made in 24-feet lengths; or, covered with silk or worsted, up to 100 feet.

VULCANIZED HOSE, for FIRE ENGINES, BREWERS' USE, and for standing great pressures (Rubber and Cloth combined), made to any length or size to fit the necessary screws, &c.

VULCANIZED INDIARUBBER AIR-TIGHT BAGS, made any size, for Gas Mains, with flexible tubes attached, and fitted with stopcocks complete.

BRYAN DONKIN and CO.'S Improved GAS VALVES (Registered). Messrs. Bryan Donkin and Co. solicit the attention of Directors and other Gentlemen connected with Gas Companies, to their improved GAS VALVES, which have been adopted and approved of by the principal Companies and Gas Engineers of London and elsewhere, on account of the advantages and greater security attained, and the more perfect adaptation to the purposes required.

As the Inventors consider the superiority of these Valves now fully proved, it remains simply to quote the prices:—

	Per in. diam.	Separate Spigot and Faucett Fittings. Per in. extra.
From 14 in. to 10 in., inclusive,	13s.	3s. 6d.
„ 9 in. to 4 in.,	14s.	2s. 6d.
„ 3 in. to 2 in.,	15s.	1s. 6d.

The above prices include an Indicator, for showing the extent to which the Valve is open.

Bryan Donkin and Co. also solicit the attention of the public to their newly-invented Registered SAFETY GAS VALVE, or SLIDE-COCK, for service mains. It is constructed with plane surfaces, presenting a straight and full-sized bore for the flow of gas, avoiding the cone and being as durable as the best slide-valves.

Engineers' Works, Grange-road, Bermondsey.

A. WRIGHT, Gas Engineer and Meter Manufacturer, 55, Millbank-street, near the Houses of Parliament, Westminster, respectfully calls the attention of Gas Companies and Engineers who are not yet provided with Station Meters to the fact that he has erected two of the largest machines of this kind in existence, the one for the Chartered Gas Company, London, the other for the Hibernia Gas Company, Dublin, for both of which he has obtained the highest testimonials.

To this branch of business A. W. devotes much attention, as well as to the Manufacture of all kinds of Experimental Machinery for Gas purposes.

Consumers' Meters of all sizes at the usual prices, with a liberal discount to wholesale purchasers.

BRETTELL and WHITEHOUSE, late Brettell and Rufford, beg to inform Gas Companies and others requiring best STOURBRIDGE BRICKS and CLAY that they continue making all kinds of BRICKS, and warrant all their goods fully equal to any house in the trade.

Fire Brick Works, Stourbridge.

RUFFORD'S FIRE-BRICKS, RETORTS, CRUCIBLES, and CLAY. A large stock always on hand, and every description of Fire-proof goods carefully and promptly made to order.

FRANCIS TONGUE RUFFORD
(Sole Proprietor),
STOURBRIDGE.

MESSRS. OAKES and CO., Alfreton Iron Works, Derbyshire, and Wenlock Iron Wharf, City-road, London, beg respectfully to inform Gas Companies and the Public, that the London Agency for the SALE of their CASTINGS is now transferred to Mr. ALFRED PENNY, who will always keep in stock at Wenlock Wharf a large supply of Retorts and Mouthpieces of different sizes, Socket and Flanch Pipes, Bends, Branches, Crosses, and Trees, Syphon Wells, Lamp-posts, &c. &c.; Fire Bricks, Tiles, and Clay, Iron Borings, and almost every article used in Gas and Water Works.

In calling attention to the above announcement, Mr. Penny begs to say that his best attention shall be given to any orders that may be entrusted to his care; and also to remind those interested in the matter, that Messrs. Oakes, from their long connection with Gas Companies, have, perhaps, the largest Stock of Patterns for Gas Apparatus of any house in the trade; and that their prices, taking into account the quality of their goods (being made of the best cold-blast iron), are unusually low.

METER INDICES.

J. CLUER, Gas Meter, Index Maker, and Model Machinist, No. 1, Bowling-green-lane, Clerkenwell, London.

INDICES and all other Apparatus for Gas Meters of every size and kind, made on the shortest notice, of the best metal, and of superior workmanship.

F. & C. OSLER,
44, OXFORD-STREET, LONDON;
MANUFACTORY—BROAD-STREET, BIRMINGHAM,
Manufacturers of Glass Chandeliers, Glass Lustres, Table Glass, &c. &c.
ELEGANT CRYSTAL GLASS CHANDELIERS, FOR GAS

(Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. From £4. 15s., upwards. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.

THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE, ON THE LOWEST TERMS.

THOMAS EDGE, Patent Wet and Dry Gas Meter Works, Brass Foundry, Gas Fitting, and Chandelier Manufactory, WESTMINSTER. City Department, No. 6, POULTRY, CHEAPSIDE, LONDON.

Station Meters, Governors, Pressure Registers, Experimental Meters, and every description of Gas Apparatus, the accuracy of which may be fully relied upon.

Edge's Improved Portable Photometer—none like unto it. See JOURNAL OF GAS LIGHTING, June 11, 1849.

Edge's Triple Valve, both Hydraulic and Slide, for Station Meters, Governors, and Purifiers, or, indeed, for any Apparatus requiring a by-pass, being "*three valves in one*," and at two-thirds the cost of the ordinary slide-valves.

THOMAS EDGE begs to call the attention of Gas Companies to the following Improvements possessed by his Patent Meter, contrasted with the defects of the common Meter as generally made at the present time:—

DEFECTS IN OLD METER.

OLD INDEX.

Difficulty in reading off the quantity consumed.

Frequent mistakes and misunderstandings in consequence.

OLD VALVE AND FLOAT.

This often becomes a fixture by the corrosion of the guide-wires, and fails to show a want of water in the Meter, whereby the Company is a loser.

OLD SYPHON AND SIDE-PLUG.

The Gas Company can at any time be defrauded at these points.

Liability to fire and explosion when the Syphon-plug is left out and gas on, or to explode the meter when the gas is off.

By unscrewing the side-plug, water can be abstracted, so as to make the Meter register considerably less than it ought.

IMPROVEMENTS IN PATENT METER.

PATENT INDEX.

No difficulty at all. The Index is read off as a common row of figures.

PATENT VALVE AND FLOAT.

The above cannot possibly become fixed, as the connecting wire never can touch any contiguous part; consequently the Float must fall when the water decreases.

PATENT SYPHON AND WATER-BOX.

No possibility of abstracting Gas, inasmuch as the Syphon-plug is sealed off by the dip-pipe below the water-box.

No side-plug is required, so that the water cannot possibly be drawn off below its proper level.

Again, the gas need not be turned off, should the Meter require water while the lights are in use, which is necessarily the case with other meters, and by which the consumer is subjected to serious inconvenience.

RAMSAY'S Garesfield Colliery, NEWCASTLE-UPON-TYNE.

COKING COAL and COKE of the best quality; superior CANNEL COAL, and FIRE GOODS of all descriptions.

Analysis of Garesfield Coke, by Dr. Richardson, of Newcastle:—

Carbon	97·60.
Ashes	1·55.
Sulphur	0·85.

Products of Ramsay's Newcastle Cannel Coal, as ascertained by Drs. Leeson and Miller, and G. H. Palmer, Esq.:—

Gas per Ton of Coal, cubic feet	9·667.
Specific Gravity	0·731.
Illuminating Power	1·85 to 2·03. ordinary Newcastle Coal Gas being ·1.
Coke per Ton of Coal	13¼ cwt.

Office, Broad Chare, Newcastle-upon-Tyne; and 46, Fenchurch-street, London.

ANDREW McLAREN and CO., Steel-yard Wharf, 87, Upper Thames-street, London, have always in Stock a large Assortment of Cast-iron Socket and Hot-water Pipes, Wrought-iron Tubing with Connections, with a variety of goods adapted for every purpose, all of the best quality, and at the lowest price.—Contracts taken to any extent.

ESTABLISHED 1827.

JOHN BEVERLEY and SON, Manufacturers of the Improved METALLIC GAS METERS, 68, BRIGGATE, LEEDS.

In returning thanks to Gas Companies, and those who have been pleased to patronize the use of their Gas Meters, take leave to observe that they still continue to make the outer cases of Cast Iron, which are carefully fitted and put together with screws, and the interior wheel or drum of a composition that has stood the test of years.

Dealers in all kinds of Gas Fittings, Tubing, &c. &c.

PATENT GAS METER MANUFACTORY,
No. 66, Snow-hill, London.

WILLIAM SMITH, by the improvements he has made in the Wet Meter, and which he has secured by her Majesty's Royal Letters Patent, the accuracy of their registry is rendered certain by the introduction of the adjusting slide and hydraulic, whereby a Perfect Water Level is readily obtained, and the Hydraulic precludes the possibility of abstracting water from the meter by increased pressure or otherwise, thus surmounting the great desideratum of the Wet Meter. In his Patent Equitable Gas Meter neatness and strength are combined, the backs and fronts of the case being stamped by powerful machinery out of thick plate iron (tinned or galvanized); and the internal construction is of the best metal, which will resist the action of any impurity in the gas.

Old Meters may readily have the adjusting slide and hydraulic applied, thereby having accurate measurement assured.

Station Meters, Governors, &c., made on the shortest notice.

HARPERS and MOORE, of the Delph Fire-brick and Clay Works, Stourbridge, invite the attention of Gas Companies, Engineers, Oven Builders, and all consumers, to their Stock of FIRE-BRICKS, LUMPS, or BURRS, QUARRIES, CLAY, and other Goods, a large assortment of which is always kept at their London Depôt, No. 7, Wenlock-road, City-road; also Melting-pots for Brassfounders and Metal Refiners. These articles are made in a very superior manner from clay of the very best quality, and have been proved by metal-melters (who can be referred to) to have withstood the most severe tests, and for very long periods.

Shipping orders supplied, and every description of Fire-clay Goods made to pattern or drawings on the shortest notice.

H. and M. particularly invite the attention of Gas Companies to a trial of their Fire-clay Retorts, which they are now making in a very superior manner, and of a quality which, on trial, will be found to surpass anything of the kind hitherto produced. The superior quality and peculiar admixture of their clays enable them to manufacture an article which fully admits of the necessary expansion and contraction, to allow of their being let down at the end of a season, when the usual supply of gas is not required, and again put to work for successive seasons without fear of cracking or leakage from any other cause.

H. and M. further beg to direct attention to the evidence of Mr. Croll, given before a Committee of the House of Commons, relative to the use of Clay Retorts (see "Gas-lighting Journal" of April 10, 1849, pages 43 and 44). The Clay Retorts there referred to by Mr. Croll were made at, and supplied from, the works of Harpers and Moore, as above; they were put to work in August, 1846, and are now in full and constant operation.

Testimonials can be seen, and further information obtained, on application (if by letter, prepaid), addressed as above.

H. JONES, Gas Meter Manufacturer, No. 44, OLD-STREET, St. Luke's, London, begs respectfully to call the attention of Gas Companies to his latest improvements in the WET METER, by means of which water cannot be abstracted, neither can Gas by any possibility pass through the Meter without registering.

FIRE Clay Gas Retorts.—The subscribers have for many years been extensive manufacturers of FIRE CLAY RETORTS, and supply most of the works in the centre and east coast of Scotland. They will guarantee their Retorts to last from one to two years, and to give satisfaction. They are cheaper than iron, carbonize coal more quickly, and with less fuel. Their Retorts may be seen at work at Poplar Gas Works, London.

Price £2 to £3, according to size.

Fire Bricks and all other Fire Clay Articles furnished of best manufacture, and at moderate prices.

FRASER and SANDERSON.

Inverkeithing, March 6, 1849.

Annual Expense of Retorts at the Dunfermline Gas Work, showing the difference of Expense betwixt Iron and Inverkeithing Clay Retorts.

To May, 1835, Iron Retorts used . .	£161	1 10
1836, Do. . .	154	17 9
1837, Do. . .	167	17 0
1838, Iron, and Clay commenced	137	3 0
1839, Iron and Clay . .	81	18 0
1840, Clay Retorts . . .	20	5 0
1841, Do. . . .	29	5 0
1842, Do. . . .	22	10 0
1843, Do. . . .	24	0 0
1844, Do. . . .	19	2 10
1845, Do. . . .	14	14 0

PATENT FIRE-CLAY RETORTS.

ORLANDO BROTHERS and RAILTON, Manufacturers of O. Brothers's Patent, beg to state that these RETORTS being made in ONE ENTIRE OPERATION, and in ONE PIECE of any required shape, length, breadth, and height, are not liable to Cracks and Fissures, of which there is a just and general complaint; and they are consequently superior to and cheaper than any hitherto manufactured.

Prices per foot in length:—

	At Blackburn.	In London.
12 in. by 12	7s. 0d.	8s. 3d.
14 in. by 12	8s. 0d.	9s. 6d.
16 in. by 12	8s. 6d.	10s. 3d.
18 in. by 15	9s. 6d.	11s. 6d.
19 in. by 13	9s. 6d.	11s. 6d.
24 in. by 15	11s. 6d.	13s. 9d.

exclusive of the angle-iron flanges.

References and further particulars may be obtained on application to the Patentee, Gas Works, Blackburn; or to Messrs. George Barlow and Son, 9, Charterhouse-square, London.

WEST BROTHERS and CO.,
LATE
THOMAS WEST,
GAS METER MANUFACTURERS, BRASS FOUNDERS, &c., UNION-STREET, OLDHAM.

Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gas Holders, Governors, Slide Valves, &c. &c.

LLOYD'S Patent Fan Blower.—The attention of Founders, Engineers, Gas Companies, Manufacturers, &c., is respectfully directed to the PATENT FAN BLOWER, as being the best Machine hitherto introduced for Blowing, Exhausting, or giving motion to aëriform fluids, at either high or low pressures. It will do the same amount of work as the ordinary Fan Blower, with half, and, in some cases, as little as one-third, of the power, and when at its highest speed is wholly unaccompanied by the disagreeable humming noise which invariably attends the common machine.—Further particulars may be obtained on application (by letter or otherwise) to GEORGE LLOYD, 70, Great Guildford-street, Southwark.

WILLIAM SUGG, Gas Engineer and Manufacturer of Patent Wet and Dry Gas Meters, combining all the latest acknowledged improvements; Brass Founder, Gas Fitter, and Lamp Contractor; Manufacturer of all kinds of Plain and Ornamental Gas Apparatus, and Contractor for the Erection of Gas Works. Designs and Estimates submitted; Station Meters and Governors of any size.

Gas Meter and Apparatus Works, 19 and 20, Marsham-street, Westminster.

THE New Patent GAS LIGHT MONITOR, adapted to every description of Burner, and supplied at a cost placing it within the reach of every consumer of Gas, regulates the flame to any required height, economizing the consumption, and preventing the danger and inconvenience arising from the flaring and smoking of lights. It may be seen in daily use at the office of the Patentees, 20, King William-street, Charing-cross.

R. LAIDLAW AND SON,
GAS ENGINEERS,
BRASS AND IRON FOUNDERS AND MANUFACTURERS OF GAS METERS, MALLEABLE IRON AND BLOCK-TIN TUBES, GAS LAMPS, PENDANTS, BRACKETS, AND FITTINGS, RETORTS, PIPES, and all APPARATUS required for GAS WORKS, of the best quality.

ORDERS promptly executed, and ESTIMATES given.

EDINBURGH AND GLASGOW.

THE Economic Gas-cooking Stove.— With this Registered Patent Apparatus, COOKING by GAS is performed with little trouble, cleanliness, and economy; and, if necessary, where there is no chimney. Those who have not seen how much heat can be obtained from a few jets of Gas, scientifically applied for Chemical, Manufacturing, or Culinary Purposes, are invited to inspect the different kinds of Apparatus at C. RICKETS Manufactory, 5, Agar-street, Strand, opposite Charing-cross Hospital.

TO GAS COMPANIES.

JOHN EUNSON, Gas Engineer and Contractor for the Erection of Gas Works, continues to manufacture CLAY RETORTS upon the most approved principle, and of the best material.

Wolverhampton, May 5, 1849.

JOSEPH BOULTON, Gas Meter Manufacturer, No. 1, COPPICE-ROW, CLERKENWELL, LONDON, begs to call the attention of Gas Companies and the public in general to his improved GAS METER, containing all the latest improvements.

J. B. warrants all Meters to be manufactured of the best materials and workmanship, the wheels, &c., being of metal. Old Meters repaired on the lowest terms.

ESTABLISHED IN 1834.

S. KING, Gas Meter Manufacturer, 21, Cock-lane, West Smithfield, London.

Meters made of the best materials and workmanship, with all the recent improvements, and warranted correct in registration.

M. KELLY, Cast Iron Wharf, 31, Bankside, London.—Retorts of superior quality, Socket and Flange Pipes, Bends, Branches, Syphons, and every description of Castings for Gas and Water Works, Gasometers, Tanks, Purifiers, Condensers, &c., erected complete, or the materials supplied.

Gas Valves and Sluice Cocks on an improved principle. Patent Gas Tubing and Connections.

A stock of the above articles kept.

The Pipes and Retorts supplied by M. K. are cast vertically, which ensures soundness and equality of thickness throughout.

THOMAS ALLAN and CO., SPRING-BANK IRONWORKS, GLASGOW, have always on hand a large assortment of GAS PIPES and other Castings connected with Gas Works, which they beg to solicit orders for.

WM. PARKINSON
(Successor to the late Samuel Crosley),
COTTAGE-LANE, CITY-ROAD, LONDON,

Begs most respectfully to announce that he has, in addition to the continued manufacture of GAS METERS, commenced (under Patent) the manufacture of Meters for measuring Water, Spirits, &c.

N.B. These Meters are as simple and durable as the Gas Meter, and as correct as that instrument under the most careful manipulation.

IRON Roofing Works, Southwark.
Office—3 A, Mansion-house-place, London.
JOHN H. PORTER,
Patentee of the Corrugated Iron Beams, Girders, and Fireproof Floors;
Manufacturer of IRON ROOFS and BUILDINGS, Chiefly of
THE PATENT GALVANIZED IRON.

This material has been employed by J. H. Porter for several years past in the construction of Iron Roofing for Railway Stations and Dockyards, at home and abroad; Farm Buildings, Factories, Gasworks, Warehouses, &c.; Sugar-houses, Megass and Coffee Sheds, Stores, Dwellings, and Market-places, in the East and West Indies, China, at the Cape of Good Hope, and in other parts of the world; Iron-bar and Strained-wire Fences, Sheep and Cattle Hurdles.

TO Gas Companies, Water Companies, and Others.—TO BE DISPOSED OF, about NINETY 24-Inch MAIN PIPES, at — per ton.

Application for particulars as to price, &c., to be made to the Storekeeper at the Chartered Gas Light and Coke Company's Works, Horseferry-road, Westminster.—February, 1849.

CAST Iron Retorts, Socket Pipes, and Connections of every size suitable for Gas and Water Works, Lamp Columns, Wrought Iron Tubing, Hot Water Pipes, Rain Water Pipes, and Eaves Gutters, in stock, and sold on the lowest terms, at LYNCH WHITE'S Iron Wharf, 66, Bankside, London.

M. SHEEN, Gas and Railway Lantern Maker, 90½, Holborn-hill, begs to inform Managers of Gas Works, &c., that she continues to contract and supply Lanterns on reasonable terms, and keep them in repair by the year.

TO Engineers and Boiler-makers.— LAP-WELDED IRON TUBES for Marine and Locomotive Steam Boilers; Tubes for Steam, Gas, and other purposes; all sorts of Gas Fittings. The BIRMINGHAM PATENT IRON TUBE COMPANY, 42, Cambridge-street-crescent, Birmingham, and Smethwick, Staffordshire, manufacture Tubes under an exclusive licence from Mr. RICHARD PROSSER, the patentee. These Tubes are very extensively used in the Boilers of Marine and Locomotive Steam Engines in England and on the Continent; are stronger, lighter, cheaper, and more durable than brass or other copper tubes, and are warranted not to open in the weld.

42, Cambridge-street-crescent, Birmingham.

Works—Smethwick, Staffordshire. London Warehouse—68, Upper Thames-street.

Second Edition.—Ninth Thousand.

A LETTER to the Right Hon. the Earl of CARLISLE on the COST and SUPPLY of GAS in the METROPOLIS. By a CIVIL ENGINEER.

"He furnishes, to his credit we state it, as much statistics as can be conveniently contained in thirty-two octavo pages; and manfully grapples with some of the strongest cases put forward by the anti-monopolists. We thank the anonymous Civil Engineer for his facts and figures."—*Daily News*, Aug. 17.

London: W. Strange, 21, Paternoster-row; and all booksellers in town and country. Price 1s.; by post, 1s. 4d.

GUTTA PERCHA TUBING.

GUTTA Percha Tubing, being unaffected by moisture, acids, alkalies, grease, &c., is useful for the conveyance of Water, Oil, Chemicals, Liquid Manure, &c. It is peculiarly valuable for Drain and Soil Pipes. In case of any stoppage, an incision can be made in the tubing with a sharp knife, and readily closed again by means of a warm iron. Its strength is extraordinary; the small half-inch diameter tubing having resisted a pressure of 250lb. on the square inch without bursting.

Gutta Percha is totally impervious to wet, and may be steeped in water or buried in damp or marshy grounds for years. IT IS NOT SO LIABLE TO INCRUSTATION, and, from its peculiar property as a non-conductor, is not affected so soon by the frost of winter as metal piping.

The smaller sizes of the Tubing may be had in lengths of from 100 to 400 feet, and the larger sizes of 50 feet, each.

The extraordinary power possessed by Gutta Percha Tubing as a CONDUCTOR OF SOUND renders it invaluable for conveying messages from one room or building to another.

Every variety of Gutta Percha Articles manufactured at the Company's Works, Wharf-road, City-road, London; and sold by their Wholesale Dealers in town or country.

CONTENTS.

	PAGE
Circular to Gas Companies	131
Communicated Articles:—	
Mr. Wright in Reply to Dr. Fyfe	131
Correspondence:—	
Gas Prices	133
Cost Price of Gas	134
Legal Intelligence:—	
Frauds on the Imperial Gas Company	134
Miscellaneous	135

TO CORRESPONDENTS.

J. K. (Birmingham.)—*Keep your money at home. Gas lighting at Rome will be a ruinous speculation, in consequence of the cheapness of oil. You can buy shares in the gas companies of Florence and Leghorn at one-tenth of their nominal value, and the latter is far more advantageously situated for a coal gas work than the Eternal City; indeed we see by the public papers that the* "concession" *granted some time since has been withdrawn.*

W. J. (Lincoln.)—*You are in error in conceiving that the Act* 7 *and* 8 *Vic., cap.* 110, *limits the responsibility of shareholders to the amount of their subscriptions. It is a mistake which projectors of new companies often fall into. See the* "Circular to Gas Companies" *below.*

G. G. (Newcastle.)—*We believe the gas works at Lisbon belong to a Belgian company, and those at Naples to a French one; both are unprofitable speculations as yet.*

NOTICES.

All communications for the JOURNAL OF GAS LIGHTING, and orders for Advertisements, to be addressed to the Editor and Proprietor, THOMAS G. BARLOW, Civil and Consulting Gas Engineer, 32, Bucklersbury, London.

The Terms of Subscription are:—

Six Shillings per Annum for the Quarterly Journal and Monthly Supplement, payable in advance.

All back numbers exceeding three months' date will in future be charged double price, unless six or more consecutive numbers are taken at the same time. The stamped editions of Nos. 2 and 4 are exhausted.

Advertisements are inserted at the rate of 5s. per six lines, and 6d. per line for all beyond, subject to the following discounts, if paid in advance:—

15	per cent. for	3	insertions.
25	ditto	6	ditto.
33⅓	ditto	12	ditto.

Subscribers who have not remitted the amount of their subscriptions are requested to do so, by Post-office order, to the Proprietor.

The Editor will be particularly obliged by his friends forwarding to him Notices of all Meetings, Trials, or Appeals which it may be interesting to the Gas World to have reported.

Circular to Gas Companies.

SEVERAL of our subscribers have requested us to explain the objects of the act for the Registration, Incorporation, and Regulation of Joint Stock Companies, 7 and 8 Vict., cap. 110, and the benefits conferred upon companies acting under it. They may be briefly described as conferring everything which any special act of Parliament for private purposes can confer, except the right of forcibly dispossessing another of his rights or property, and limiting the liability of the shareholders to the amount of their shares. Companies registered in accordance with its provisions are, to all intents and purposes, *incorporated*, and are entitled to have a common seal, to sue and be sued in the name of the company, to enter into contracts, to purchase and hold lands and tenements, to issue share certificates, receive instalments, borrow money within certain limits, declare dividends, hold general and special meetings, make bye-laws, and "to perform all other acts necessary for carrying into effect the purposes of the company, and in all respects as other partnerships are entitled to do." But in no respect does the law in question modify the old law of partnership, except, in the first instance, to throw the creditor on the assets of the company; and, should they be insufficient to satisfy the claims, each shareholdor is personally and individually liable to the judgment creditor for the deficiency. The clauses 66, 67, and 68 indicate the course to be followed in such a case; and, as they are of considerable importance, it may not be uninteresting to quote them at length:—

"LXVI. Provided always, and be it enacted, that every judgment and every decree or order which shall be at any time after the passing of this act obtained against any company completely registered under this act, except companies incorporated by act of Parliament or charter, or companies the liability of the members of which is restricted by virtue of any letters patent, in any action, suit, or other proceeding prosecuted by or against such company in any court of law or equity, shall and may take effect and be enforced, and execution thereon be issued, not only against the property and effects of such company, but also, if due diligence shall have been used to obtain satisfaction of such judgment, decree, or order, by execution against the property and effects of such company, then against the person, property, and effects of any shareholder for the time being, or any former shareholder of such company, in his natural or individual capacity, until such judgment, decree, or order shall be fully satisfied; provided, in the case of execution against any former shareholder, that such former shareholder was a shareholder of such company at the time when the contract or engagement for which such judgment, decree, or order may have been obtained was entered into, or became a shareholder during the time such contract or engagement was unexecuted or unsatisfied, or was a shareholder at the time of the judgment, decree, or order being obtained; provided also, that in no case shall execution be issued on such judgment, decree, or order against the person, property, or effects of any such former shareholder of such company after the expiration of three years next after the person sought to be charged shall have ceased to be a shareholder of such company.

"LXVII. Provided always, and be it enacted, that every person against whom, or against whose property or effects, execution upon any judgment, decree, or order obtained as aforesaid shall have been issued as aforesaid shall be entitled to recover against such company all loss, damages, costs, and charges which such person may have incurred by reason of such execution; and that, after due diligence used to obtain satisfaction thereof against the property and effects of such company, such person shall be entitled to contribution for so much of such loss, damages, costs, and charges as shall remain unsatisfied, from the several other persons against whom execution upon such judgment, decree, or order, obtained against such company, might also have been issued under the provision in that behalf aforesaid; and that such contribution may be recovered from such persons as aforesaid in like manner as contribution in ordinary cases of copartnership.

"LXVIII. And be it enacted, that in the cases provided by this act for execution on any judgment, decree, or order, in any action or suit against the company, to be issued against the person or against the property and effects of any shareholder or former shareholder of such company, or against the property and effects of the company at the suit of any shareholder or former shareholder, in satisfaction of any monies, damages, costs, and expenses paid or incurred by him as aforesaid in any action or suit against the company, such execution may be issued by leave of the court, or of a judge of the court, in which such judgment, decree, or order shall have been obtained, upon motion or summons for a rule to show cause, or other motion or summons consistent with the practice of the court, without any suggestion or scire facias in that behalf; and that it shall be lawful for such court or judge to make absolute or discharge such rule, or allow or dismiss such motion (as the case may be), and to direct the costs of the application to be paid by either party, or to make such other order therein as to such court or judge shall seem fit; and in such cases such form of writs of execution shall be sued out of the courts of law and equity respectively for giving effect to the provision in that behalf aforesaid as the judges of such courts respectively shall from time to time think fit to order; and the execution of such writs will be enforced in like manner as writs of execution are now enforced: provided that any order made by a judge as aforesaid may be discharged or varied by the court, on application made thereto by either party dissatisfied with such order: provided also, that no such motion shall be made, nor summons granted, for the purpose of charging any shareholder or former shareholder, until ten days' notice thereof shall have been given to the person sought to be charged thereby."

On the other hand, some protection is afforded to individual shareholders by clause 55, which provided for the enforcement of the instalments due from defaulters, a process previously difficult, except by a suit in Chancery. The act is, upon the whole, a great improvement upon the old system; and we should like to see it followed up by further legislation, so that responsibility could be limited, as is beneficially practised in America, in France, and in most of the European states. It would be the means of unlocking a large amount of capital, which now seeks employment in foreign speculations, less secure in their operation, but affording protection against ruinous demands upon the shareholders in case of the total failure of the project.

Communicated Articles.

MR. WRIGHT IN REPLY TO DR. FYFE.

SIR,—The observations which I originally made upon Dr. Fyfe's "Comparative Value of Coals for the Purpose of Illumination" comprised three general statements, viz.:—

That the values were all more or less erroneous.

That, in particular, Newcastle coal gas, when compared with Lesmahago coal gas, is not as 1· is to 6·6, but as 1 to 2·3.

And that the errors, in my opinion, arose from the use of *chlorine* as a test of illuminative value, rendered still more fallacious by being used in connection with a *durability test*.

I have carefully read the reply to those statements, and as it has failed to remove my previously-expressed opinions, and as the learned doctor has taken my former observations in the kindest possible manner, I will take the liberty of again referring to the subject.

The doctor seems to have an impression, from his recent experiments, that the original Newcastle coal gas, which he adopted as a standard for comparison with other gases, was of inferior quality to that now used in London, and also to that made from the coal he has

recently tested. He has consequently raised his standard 89 per cent.: the new standard he has chosen being New Pelton and South Peareth coal, yielding 9746 cubic feet per ton, of the specific gravity ·555. I am sorry that he has abandoned his original standard of 8000 cubic feet, specific gravity ·420, on the large scale, or 8000 cubic feet, specific gravity ·460, in the small apparatus for Newcastle coal. The former I can agree with; but the latter few practical or scientific men will adopt, for it is 25 per cent. wrong in specific gravity, and about 50 per cent. too high in illuminating power; being equal, in that respect, to Wigan and Yorkshire cannel gases; for those are stated in his original paper at 1·93 and 1·81 respectively, as compared with his first standard at 1·; and that standard, being raised 89 per cent., gives the same illuminating power to Newcastle caking coal and English cannel coal: a valuation contradictory to all former experiments and to general practical results.

This elevation of standard has brought his experiments and mine to agree very nearly upon Lesmahago coal; but, as I have no desire to purchase this agreement by what would be on my part a wilful admission of a false standard, I will rather adduce further evidence to prove my original position to be correct, and to show that the effect of the chlorine test is to *raise the richer gases above*, and to *depress the poorer gases below*, their true values.

The doctor has objected to my attempting to impugn the chlorine test by *reasoning*, when an appeal could be made to *facts*. My answer is, that I have already appealed to facts; and, as my facts and his do not agree, I am compelled either to dogmatize mine and reject his, or attempt to show by reasoning, from some well-known and admitted principles, *which* of them are most to be relied upon.

The chlorine test, in connection with durability, rests upon some experiments, made a few years ago by Dr. Fyfe, which seemed to agree with the results given by the photometer. More recent experiments have convinced the doctor that this agreement is not so perfect when the condensation exceeds 15 per cent. This he attributes to the want of a proper burner fitted for the economical combustion of the richer gases. I do not concur in this opinion, and I think I can show that the photometer does not agree with the chlorine test when the condensation is less than 15 per cent.; and that the disagreement, both above and below, is to be attributed to another cause.

The doctor's process, deduced from those experiments, resolves itself into this formula.

The illuminating powers of coal gases are directly as the volumes of matter in each, condensable by chlorine, multiplied into their respective durabilities when burning flames of equal lengths through orifices of equal dimensions.

This is rather a complex formula, and as the latter part of it, relating to durability, will evidently have the effect of increasing the difference between rich and poor gas, I will, for the present, deal with the first part of it, viz.:—

"The illuminating powers of coal gases are directly as the volumes of each condensable by chlorine;" and if I can show that this is not correct, but, on the contrary, that the condensation by chlorine increases in a greater ratio than does the illuminating power, it will follow that the latter part of the formula being applied will still further increase the error.

I will take for my premises that coal gas is substantially composed of hydrogen and carbon; and that the whole of the light given by the combustion of gas is due to the carbon, and in direct proportion to the quantity present. My authorities for these are Dr. Henry, Dr. Ure, and, I believe, every chemist of the day who has attended to the subject;* and I can only add my humble testimony to their truth by saying that all my experiments, whether with candles, oil, naphtha, or gas, have so nearly corresponded with those laws that I am inclined to believe them correct.

I will also assume that the hydrogen and carbon of which it is composed exist in three different states—olefiant, light carburetted hydrogen, and pure hydrogen. This will, I suppose, be granted me, although with slight reservations which will not affect the issue.

Now, as there is nearly 300 per cent. difference between the doctor's chlorine experiments and my photometric ones, let us examine the gases experimented upon by the laws enumerated, and see upon which side the evidence leans.

Chlorine condenses the olefiant in coal gas, and therefore shows the quantity present; and, if olefiant was the only compound in gas into which carbon enters, then the condensation would be an index of the entire illuminating power; but this is not the case: there is light carburetted hydrogen in gas having volume for volume half the quantity of carbon in it which olefiant has.

Or, if olefiant always existed in coal gas in a certain ratio to the other illuminating compound, then the olefiant would give the proportional quantity of illuminating power due to other matter, and hence give the value of the gas.

This might accidentally be the case in a few trials, and probably was so in the first experiments made by the doctor—for I have the highest opinion of him as an experimentalist; but that it is so generally can scarcely be expected, when we consider the circumstances under which coal is distilled, in retorts varying in temperature and amount of heated surface, affecting more or less the susceptibility of olefiant for being changed into light carburetted hydrogen; indeed I will show, from the principal coals the learned doctor has valued, that this is very far from being the case.

Newcastle gas is stated at 8000 feet per ton, specific gravity ·420; condensation by chlorine, 4·33.

The quantity of olefiant being thus given, and supposing the gas to be pure, it will be easy to find, from the weights of the compounds, the only proportions which could form a gas of this specific gravity:—

Cubic Inches.		Grains.
4·33	olefiant weigh	1·224
64·00	light carburetted hydrogen . .	11·142
31·67	hydrogen	·674
100·00	inches of a gas so constituted would weigh	13·040

Then as 100 inches of air weigh 31·0117 grains
13·04 ÷ 31·0117 = specific gravity ·420 nearly.

Now, there being twice the quantity of carbon in olefiant that there is in light carburetted hydrogen, the light given by the two gases would be respectively:—

Olefiant . . . . 2 × 4·33 = 8·66
Light carburetted hydrogen 1 × 64· = 64·00

Or, olefiant being taken as . 1·00
Light carburetted hydrogen will be 7·39

The Wigan cannel is given as 9500 feet; specific gravity, ·460 to ·520. We will take the mean ·490, with which, as with the first standard, I very nearly agree.

Cubic Inches.		Grains.
7·55	olefiant weigh	2·308
72·00	light carburetted hydrogen . . .	12·53
20·45	hydrogen	·427
100·00	inches of gas so constituted will weigh .	15·265

and 15,265 ÷ 31·0117 = ·490 specific gravity.

The value of olefiant will be . 2 × 7·55 = 15·10
„ light carburetted hydrogen 1 × 72·0 = 72·00

Or, olefiant being taken as 1·00
Light carburetted hydrogen will be 4·77

In the Newcastle gas the olefiant was nearly $\frac{1}{7}$ of the whole value; in this it is nearly $\frac{1}{5}$: so that the olefiant increases in some gases evidently without a corresponding increase of the other illuminating matter; and hence to infer that the other matter increases in the proportion of the olefiant is to assign too high a value to the richer gases. This is still more forcibly borne out in the next example which I shall adduce.

The average of the gas sold in Scotland is estimated by Dr. Fyfe at ·640 specific gravity. This I believe to be too high; it is about the specific gravity of the heaviest gas I found in Scotland in 1847, while in one of the large towns it was below ·500. I believe even ·600 to be a high average for Scotland. Taking it at ·640, and the condensation by chlorine at 14, it would be composed as follows:—

Cubic Inches.		Grains.
14	olefiant	4·28
86	light carburetted hydrogen . . .	14·97
100	inches of gas so constituted will weigh .	19·25

and 19·25 ÷ 31·0117 = specific gravity ·620 nearly.

Thus we see that, taking the doctor's condensation by chlorine at 14 to be exact, when the 100 inches are made up of the next heavier compound the specific gravity is only ·620, and this in connection with my experiment in 1847 would show, I think, that his specific gravity is too high.

The value of olefiant will be 2 × 14 = 28
Light carburetted hydrogen 1 × 86 = 86

Or, olefiant being taken as . . 1·00
Light carburetted hydrogen will be 3·07

These calculations are conclusive, even if we make some allowance for errors due to the weights of impurities, that olefiant was present in the three gasses valued by Dr. Fyfe in ratio to the other illuminating compounds as 1 to 3, 1 to 5, and 1 to 7 nearly; and his chlorine test, supposing them to be in the same ratio in all, the errors would be, taking Newcastle as the standard:—

	Values by Calculation.		Values by Chlorine.
Newcastle	8·66 / 64·	72·66	72·66
Wigan	15·10 / 72·	87·10	130·84
Scotch	28· / 86·	114·	235·2

The chlorine test gives, therefore, about double the value to Scotch cannel which its composition indicates; and, if to this error be added the error due to the latter part of the doctor's formula relating to the durability, there will be little difficulty in seeing how the highly-magnified values of the richer gases have been obtained.

I will now give some experiments by Dr. Henry (Dr. Ure's "Chemical Dictionary") which will show by analysis the relative

* In practice this law is slightly interfered with, gases containing an excess of hydrogen being with difficulty made to consume their carbon in a solid state.

quantity of olefiant in Wigan Cannel and Clifton coal, and the relative quantities of carbon in each; from which it will be seen that the ratios of each from different coal are not equal, nor even the ratios at different periods of the charge in the same coal.

	100 Measures of Purified Gas contain			100 Measures of Purified Gas	
	Hours from commenet.	Olefiant.	Other inflam. Gases.	Azote.	Consumes Oxgn.	Give Carbonic Acid.
Wigan Cannel.	½*	16	64	20	180	94
	1	18	77¼	4¾	210	112
	3	15	80	5	200	108
	5	13	72	15	176	94
	7	9	76	15	170	83
	9	8	77	15	150	73
	10½	6	74	20	120	54
	12	4	76	20	82	36
Clifton Coal.	1	10	90	0	164	91
	3	9	91	0	168	93
	5	6	94	0	132	70
	7	5	80	15	120	64
	9	2	89	9	112	60
	11	0	85	15	90	43

The second column shows the quantity of olefiant, and, consequently, the illuminating power by that test. The last shows the carbonic acid yielded by the gas on detonation with oxygen, which will, of course, be proportionate to the whole of the carbon contained in the gas. The second column gives, therefore, the value of the gas, by using the first part of Dr. Fyfe's formula; the last column gives the value of the gas by Dr. Henry's method. To make the matter more plain, I have supposed 10 chlorine = 91 carbonic acid, and the other quantities of carbonic acid proportional. This will give—

Clifton.		Wigan.	
Test by Chlorine.	Test by Detonation with Oxygen.	Test by Chlorine.	Test by Detonation with Oxygen.
10	10·	16	10·33
9	10·22	18	12·3
6	7.69	15	11·8
5	7·03	13	10·33
2	6·60	9	9·12
0	4·72	8	8.02
		6	5·9
		4	4·
Average 32	46·26	Average 89	71·8
Decimal Average.		Decimal Average.	
1	1·45	1	·87

This table is a singular corroboration of my previous calculations. The variation in the results range from 16 chlorine and 10·33 carbon to 0 chlorine and 4·72 carbon, in the various hours of the charge; and the average charge of each gives the Wigan, chlorine 1, carbon ·87; while the Clifton is, chlorine 1, carbon 1·45—still showing the increasing ratio of carbon over olefiant in the poorer gas.

The above-quoted experiments and calculations will, I think, warrant me in drawing the following conclusions:—

That olefiant gas is not the only illuminating compound in coal gas.

That even in the richest coal gas it *is not the most important* illuminating matter.

That it exists *in no definite ratio* with the other illuminating matter, and hence its quantity is no test of the entire value.

That the olefiant and the entire carbon exist in different proportions in Wigan and Clifton coal according to Dr. Henry; that in Newcastle, Wigan, and Scotch cannel gases the presumption seems to be that the olefiant is $\frac{1}{7}$, $\frac{1}{5}$, and $\frac{1}{3}$ of the respective illuminating matter in each, and, consequently, any test which presupposes them to be all in the ratio of $\frac{1}{7}$ must greatly over-value the richer gases.

There is not much need, therefore, for discussing the durability part of the formula, seeing that the chlorine alone is sufficiently erroneous to be rejected; but, if I were to admit that the chlorine alone gave a true evidence of the whole illuminating power, the durability test would still be open to the objection of the *lapsus* in reasoning which I pointed out in my first article, and which the learned doctor has not yet replied to.

To give a clear view of the subject, I will now give a tabular view of the values of the coals in debate, contrasting Dr. Fyfe's experiments with my own; and, at the same time, giving the nearest calculation I can upon Dr. Henry's method, the doctor's standard for Newcastle gas being 8000 per ton, specific gravity ·420; and my standard 10,000 per ton, specific gravity ·360:—

	Sp. gr.	Olefiant.	By composition.	Dr. Fyfe.	Wright.
Newcastle	·360	?	1·	?	1·
Dr. Fyfe's Newcastle	·420	4·33	1·18	1·	?
Wigan	·490	7·55	1·43	1·93	1·5
Scotch	·620	14·	1·88	5· 1	?
Lesmahago	·650	15·77	2·12	6· 6	2·3

The photometric experiments, made by me, very nearly agree with the values by Dr. Henry's rule; and I am inclined to believe that the disagreement is solely due to a cause the very reverse of that assigned by Dr. Fyfe, in speaking of the difference of the results obtained by the photometer and the chlorine test, viz., that, when hydrogen is in excess in gas, there is difficulty in consuming all the carbon in the solid state; for, as I have asserted in another paper, on "The Theory of Artificial Light," there is no difficulty in consuming economically the richest gas even in Scotland.

I have recently tested very accurately oil gas made under English's patent, and I find its specific gravity ·850, and illuminating power exactly 4. I cannot, therefore, for a moment suppose that Scotch cannel gas, specific gravity ·620, is = 6·6; I have no doubt, however, if the chlorine and durability tests were applied to oil gas, it might give it a value of ten times that of Newcastle.

The doctor's reply has also elicited another cause of error in his experiments: by his using a photometer in which the candle is only four inches distant from the disc. Every fiftieth part of an inch of this scale will be equal to 1 per cent.; and if the flame of the candle should be out of the true centre but $\frac{1}{8}$ of an inch, it would cause an error of 6 per cent. I shall not be inclined to put faith in photometric experiments made with such an instrument.

The distance I use is 50 inches, which I do not consider too long; indeed, I should prefer Mr. King's distance of 100 inches, for large lights.

The doctor has objected to my mode of experimenting with an $\frac{1}{8}$ of an inch hole, each flame being of equal intensity, and the consumption giving the relative value. It will be sufficient for me to say that, although I prefer that mode, I have also taken the values by the best burners for each, and I am quite willing that my experiments be verified by such a mode. It would be inconvenient to prolong this discussion by debating the point; but I will gladly take the affirmative of the following proposition with the doctor, or any of your correspondents.

The light given by two burners is equal when the carbon delivered from each is equal, no matter whether they be round orifices, batwing, or argand burners, *if the two experimented with are of the same construction.*

I cannot conclude without complimenting the doctor upon the good feeling which he has displayed in this controversy, the more to be commended as discussions of this kind frequently lead to mutual recriminations and wordy warfare. If any feeling has been displayed on his part, it is the praiseworthy one of maintaining a high standing for the coal of his native country—should I have the pleasure of meeting him when I journey into the sterile regions of the North, I am afraid he will not be able to pay the same compliment to my patriotism.

Westminster, Oct. 27, 1849. ALEXANDER WRIGHT.

* The first half hour's trial is doubtless affected by atmospheric air, or the presence of the products of a portion of the previous charge.

Correspondence.

ON GAS PRICES.

SIR,—Being a large holder of gas shares, I have perused most of the articles in your Journal upon the subject of gas; and having seen the proposal which was put forward last year, to supply the city of London at 4s. per 1000 feet, and give a dividend of 10 per cent. to the shareholders, I considered it expedient to make some inquiries into this matter.

The chief point of interest to me is, the amount of my dividend. Where I reside there are three competing companies, each charging 6s. per 1000 feet, viz.:—

The Chartered, which pays a dividend of six per cent.; the London, which I am informed pays no dividend whatever; and the Equitable ditto.

The price of the shares of these companies in the market is as follows, viz.:—

	Price paid per Share.	Present Value.
Chartered	£50	£45
London	50	10
Equitable	50	24

I further learn that the dividend of six per cent. paid to shareholders by the Chartered Company is only four per cent. per annum upon the total capital embarked in the concern, as no dividend was paid during the first seven years, the profits of that period having been invested in the plant, buildings, &c.; and subsequently a portion of the profits has been invested in like manner,—no bonus having ever been given by that company.

From the prices of gas shares in the market, it would appear that all persons desirous to embark their money in gas companies may do so at considerably less than their original cost; and, as to the London Company, they will gain 50 per cent. interest for their money when it shall pay a dividend of 10 per cent. upon their capital, which is said by the projectors of the new company to be the legitimate interest for gas works.

Where two or more gas companies, in addition to the water company, have mains and services laid in the same street, much inconvenience is caused to the inhabitants of such streets by the frequent breaking up of the pavement to lay new mains, and to remedy escapes and defects in the pipes; this is exemplified in the streets in Westminster, where there are three competing gas companies. The streets are also occasionally broken up to make new sewers and to repair old ones. This frequent disturbance of the

ground throws the mains and services out of level, loosening their joints, and occasionally breaking the pipes, thereby causing great leakage of gas and much expense.

The loss of gas by leakage, and the extent to which gas is surreptitiously consumed and not paid for, is I am told, very great; and further, that meters generally register against the companies. Here I will refer to a paper on gas read by Mr. Croll (the projector of a new company) at the Institution of Civil Engineers, on the 1st of April, 1845, and published by him, in which it is stated, that "It is well known that as much as from 30 to 40 per cent. of the whole quantity of gas produced is sometimes unaccounted for," which corresponds, I believe, correctly, with the loss actually sustained by the gas companies where there is competition.

There is also a further diminution in the amount of rental received, by the bad debts, and a loss by the supply to public lamps.

Assuming Mr. Croll's estimate of the quantity of gas unaccounted for in the rental received to be correct, the charge of 6s. per 1000 feet would yield to the company about 4s. per 1000 feet for the whole of the gas made. Where, then, is there real ground for complaint?

A Gas Proprietor.

ON THE COST PRICE OF GAS.

Sir,—In your Journal of Feb. 10, No. 1, there is a communication from an Ex-Gasmaker, accompanied by a tabular statement of the cost price of gas. Being connected with works situate in the west of England similar in apparatus and extent, I felt desirous, by way of comparison, to make out such a statement of our own working; and I herewith forward it you, and beg a place for it in your Journal, in the hope that it may draw from some one better versed in gas manufacturing than myself, some remarks on our well or ill doing.

The works are furnished with 10 iron D retorts in 3 benches, 2, 3, and 5; a condenser, breeze filter, 2 dry-lime purifiers, station meter, and 2 gasholders. Our capital is £5000, and we pay a ground-rent of £50 per annum.

We have 115 public lamps burning 5 feet per hour, and lighted one hour before sunset from August 15 to May 15; half are extinguished at eleven o'clock, and the rest burn till an hour before sunrise, for which we received £390, and have a private rental of £610, at 10s. per 1000 feet, and contract consumers to the amount of £80, who consume about 200,000 cubic feet. Our gross gas rental is, therefore, nearly £1100, or 7s. 8d. per 1000 feet upon the total quantity of gas made.—[For Table see next column.]

Oct. 29. R. W. I.

Legal Intelligence.

FRAUDS ON THE IMPERIAL GAS COMPANY.

A most important question to the gas consumers of the metropolis came on for adjudication on Wednesday, October 17, before Mr. Broughton, the sitting magistrate at Marylebone Police Court.

The proceedings were taken by the Imperial Gas Company, under the provisions of their Act of Parliament, the 1st and 2nd Geo. IV., cap. 117, against Mr. William Carruthers, a licensed victualler, keeping the New Inn, Bulstrode-street, Marylebone; and the information charged that the said William Carruthers did lay or cause to be laid a surreptitious half-inch pipe, twenty feet in length, with a view to defraud the Imperial Gas Company, and without the consent, in writing, of the said company, contrary to the statute in this case made and provided, whereby he had forfeited the sum of £50; also the sum of 40s. per day for every day such pipe has remained.

Mr. Richardson, the chief superintendent of the Imperial Gas Company, attended to prosecute on behalf of the company; and Mr. Duncombe, the solicitor, appeared for the defendant.

Mr. Richardson said Mr. William Carruthers burnt his gas by meter, and the suspicions of the gas inspector and of the company had been excited by the fact that it was found that the meter had not registered, during the quarter ending Sept. 29, more than half the amount it registered during the corresponding quarter of the previous year, although there was the same number of gas lights in use. In the quarter ending September, 1847, the consumption was 21,000 cubic feet of gas. In the September quarter of 1848 the meter only registered 17,200 feet; but when they came to the quarter ending September, 1849, and it was found that the register of the meter was only 9300 cubic feet of gas, it excited suspicion that something was wrong. On Sept. 28 Mr. Still, the gas inspector, inspected the state of the meter, in company with Mr. Cumby, a gas-fitter, and it was then discovered that there were about twenty feet of pipe surreptitiously connected to the inlet pipe to the meter, and the outlet pipe before reaching the meter. When the inspector made this discovery he made no communication of his suspicions to Mr. Carruthers or any one else in the house, but immediately made a report of the circumstance to the office of the Imperial Gas Company. On Saturday, the 29th, he (Mr. Richardson), accompanied by the inspector, waited on Mr. Carruthers, and, on informing him that they suspected there was something wrong with the meter, Mr. Carruthers replied, "Ay, and you suspect something else; but it is for you to prove the guilty knowledge." He added that he had sent for Mr. Watt, his gas-fitter, and it had all been removed. These were the facts of the case, and when he proved the fraud, as he should do, to the satisfaction of the court, he submitted that the magistrate must inflict the penalties laid down in the 50th section of the 1st and 2nd Geo. IV., cap. 117, of £50, for having laid or caused to be laid the

1	2	3		4	5			6		7	8	9	10	11	12			13	14	15	16	17	18	19	20	21
Date. 1848. Months action.	No. of Retorts in action.	Coals used in Retorts.		Gas made in M. Cubic Feet.	Coke used for Fuel.			Lime used for Purifiers.		Wages. Stokers, Lighters, Auxiliary Labour for Laying Mains, Retort Setting, &c.	Wear and Tear at per M. Feet; say 6d.	Salaries, at 1s. per M. Feet	Interest...1 9 Taxes and Rent ...1 3 Per M. Ft. 3 0	Total Gross Monthly Cost of Gas.	Coke Produced, reckoning 37½ bushels to the ton, or 1⅔ bushels to the cwt.			Net Monthly Cost of Gas.	Gas made per Cwt. of Coal.	Gas Purified per Bushel of Lime.	Cost of Coals per M. Feet of Gas.	Cost of Fuel per M. Feet of Gas.	Cost of Lime per M. Feet of Gas.	Cost of Wages per M. Feet of Gas.	Total Net Cost of Gas per M. Feet.	Coke Sold.
		Cwts.	Cost. £ s. d.		Bushels.	Cost. £ s. d.	Total Cost. £ s. d.	Bushels.	Cost. £ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	Bushels.	Price sold, 5½d. d.	Total Value at Selling Price. £ s. d.	£ s. d.			s. d.	d.	d.	s. d.	s. d.	Bushels.
Jan. -	10 to 8	866	32 9 6	390	1538	5	28 5 10	40	1 6 8	24 15 0	9 15 0	19 10 0	58 10 0	174 12 0	1623	5½	37 3 10	137 8 2	450	9750	1 2 6	2·5	0·82	1 3¼	7 0½	686
Feb. -	8	585	21 18 9	270	921	,,	19 3 9	40	1 6 8	12 10 0	6 15 0	13 10 0	40 10 0	115 14 2	1093	,,	25 3 4	90 10 10	461	6750	1 2	2	1·18	0 11	6 8	492
March	8	550	20 12 6	239	857	,,	17 17 1	40	1 6 8	10 10 0	5 19 6	11 19 0	35 7 0	103 11 9	1031	,,	23 12 6	79 13 9	434	5975	1 2·5	2·5	1·33	0 10¾	6 8¾	298
April -	8 to 5	549	20 11 9	227	729	,,	15 3 9	40	1 6 8	13 10 0	5 13 6	11 7 0	34 1 0	101 13 8	1031	,,	23 12 6	78 1 2	413	5675	1 0 9		1·40	1 2¼	6 10	197
May -	5 to 3	283	10 12 3	123	491	,,	10 4 7	40	1 6 8	9 15 0	3 1 6	6 3 0	18 9 0	59 12 0	540	,,	12 7 6	47 4 6	434	3075	1 4·5	4·5	2·60	1 7	7 8	53
June -	3 to 2	181	6 15 9	65	324	,,	6 15 0	40	1 6 8	9 10 0	1 12 6	3 5 0	9 15 0	48 19 11	340	,,	7 15 10	41 4 1	359	1625	1 9		4·92	6 0	12 8	160
July -	2	198	7 8 6	89	348	,,	7 5 0	40	1 6 8	13 10 0	2 4 6	4 9 0	13 7 0	49 10 8	370	,,	8 9 8	41 1 0	449	2225	1 5		2·59	3 0	9 1	13
Aug. -	2 to 3	227	8 10 3	102	360	,,	7 10 0	40	1 6 8	13 10 2	2 11 0	5 2 0	15 6 0	53 16 1	426	,,	9 15 0	44 1 1	449	2550	1 3		3·13	2 8	8 8	18
Sept. -	3	418	15 13 6	190	501	,,	10 8 9	40	1 6 8	10 18 6	4 15 0	9 10 0	28 10 0	81 2 5	785	,,	17 19 0	63 3 5	454	4750	0 10·3		1·68	1 1¾	6 8	69
Oct. -	5 to 7	821	30 15 9	375	848	,,	17 13 4	60	2 0 0	14 10 3	9 7 6	18 15 0	56 5 0	149 6 10	1538	,,	35 4 0	114 3 10	456	6250	0 8		1·25	0 9¾	6 0½	252
Nov. -	7	817	30 12 9	360	1030	,,	21 12 6	60	2 0 0	10 10 8	9 0 0 0	18 0 0 0	54 0 0 0	145 15 11	1532	,,	35 2 0	110 13 11	440	6000	0 11·5		1·33	0 7	6 2	369
Dec. -	7 to 10	1056	39 12 0	410	1250	,,	26 0 10	60	2 0 0	10 17 8	10 5 0	20 10 0	61 10 0	170 15 6	1981	,,	45 7 0	125 8 6	358	6333	0 11·9		1·17	0 6½	6 1¼	235
		6551	245 13 3	2840	9025	—	188 0 5	540	18 0 0	164 7 3	71 0 0	142 0 0	425 10 0	1254 10 11	12295	—	281 11 8	972 19 3	432	5260	1 0·8		1·50	1 2	6 10¼	2842

surreptitious pipe in question, and 40s. per day for every day it had been allowed to remain.

Mr. J. F. Hill, inspector of the Imperial Gas Company, and Mr. T. Cumby, gas-fitter, of No. 28, East-street, Manchester-square, were then examined: The former, in the main, proved Mr. Richardson's statement, and added that the surreptitious pipe conveyed gas illegitimately to three gas lights—one in the cellar, one on the stairs, and one in the kitchen. The burners alluded to would burn about 24 feet each in six hours—say from six o'clock until about twelve at night. The latter deposed to having accompanied Mr. Hill to defendant's house on the 28th of September, and examined the pipes in the cellar. He found a cork in one to prevent its connection with the meter, and to procure a surreptitious supply of gas.

Mr. Duncombe then submitted that the gas company were not entitled to penalties under the act, unless the information was laid within six months after the offence was committed. Also, that the act was definite—"shall lay, or cause to be laid." No evidence had been given to prove that his client had done either.

Mr. Broughton said his construction of this act, like all others where penalties were inflicted was, that the continuation of the offence was the offence itself. If the offence had ceased to exist for six months, and the company had made no complaint, they would have been out of court; but, as the offence was in existence on the 28th of September last, he was of opinion that the continuation of the offence was the offence itself, and he must disallow the objection.

Mr. Duncombe then addressed the court on the part of the defendant, and accused the Imperial Gas Company and its officers with having gone about in a sneaking, back-handed sort of manner to entrap his client into some admission. Now he (Mr. Duncombe) did not mean to contend that there had been no fraud committed upon the Imperial Company, but he would, he thought, prove to the satisfaction of the worthy magistrate that his client, Mr. Carruthers, was no party whatever to that fraud. He would prove that the surreptitious pipes had been in the house, and in the place where they were discovered, before his client took the house, and if he did that he would submit there was no case for a conviction. He should call Mr. Watts, the gasfitter, and Mr. Lovejoy, of the firm of Walters and Lovejoy, publicans' brokers, in Chancery-lane, and he would prove that these surreptitious pipes existed before Mr. Carruthers took the place, and he consequently could have been no party to their being laid there, and he was perfectly innocent of their existence until after he was informed of what had transpired by his servant, who let the two witnesses of the Imperial Company into the cellar.

Mr. Samuel Lovejoy was then sworn: He proved having taken an inventory of the fixtures of the New Inn, Bulstrode-street, when Mr. Carruthers succeeded Mr. Baldwin in that house. That was on the 17th of April, 1848. He valued the piping in the cellar, and said at first, to the best of his belief, it was then exactly as exhibited in the model. On being pressed by the magistrate he swore positively to the piping being there then, and that he had valued it, and found it the same on the 21st of July, 1846, when he made a valuation for a Mr. Hart.

G. Watts, a gasfitter, considered the pipes had been down three or four years.

Mr. Broughton said there could be no doubt but a fraud of a most serious description had been committed on the company. Now, if Mr. Carruthers was innocent in the matter, he thought the observations he made to Mr. Richardson, when he called on the 29th of September, were the most unfortunate an innocent man could make. When told by Mr. Richardson there was something wrong, he replied, "You must show the guilty knowledge." Now those were not exactly the words of a man taken by surprise. With regard to the objection of Mr. Duncombe, it is not necessary that the company should prove that the defendant laid down or caused to be laid down the fraudulent pipes. It was sufficient that they were in existence. But then came the evidence of Mr. Lovejoy, and most important evidence it was, for it distinctly proved that there had been a serious fraud committed on the company for a very long period, and that the surreptitious pipes were there before the defendant took the house. Now, if the evidence of Mr. Lovejoy were true, and he had no doubt of it, then the fraud was committed by some other person before the defendant took the place; and it might be that he knew nothing about the surreptitious pipes, although his unfortunate words appeared to convey a different impression. With such evidence as that of Mr. Lovejoy, it was impossible for him to convict in the present instance, and he had no alternative but to dismiss the case.

Miscellaneous News.

The Great Central Gas Consumers' Company.—We are informed that we fell into an error in our last month's notice of this Company by inserting the names of Aldermen Humphery and Finnis among the list of directors, both these gentlemen having retired from the Company.

Western Gas Company.—The general annual meeting of this company was held at the London Tavern on the 25th ult. The directors announce in their report that main pipes have been laid from the works to Kilburn, Notting-hill, Bayswater, part of Kensington, and through the Grosvenor-place district, to the lower part of Pimlico, being in all about twenty-five miles. Permission has also been granted to lay main pipes through the new (Victoria) street from the Grosvenor district into the heart of Westminister, and within a short distance of the Houses of Parliament. The engineer reports that "the Company's works have been eight months in action, but until the month of July last the operations were upon an exceedingly small scale, the supply of gas being confined exclusively to Kilburn. At that date, however, the public lights in the important district of Belgravia were lighted. The above districts, and that of Notting-hill, require a supply for about 2400 public and private lights, producing a rental of near £6000 per annum. The number of retorts set is 52, of these 27 are in action to meet the above demand. The duty of each retort in regular work will average about 800 lb. of cannel coal per diem, and, calculating 9000 feet of gas from the ton, 3214 cubic feet are produced by each retort per diem; hence the 27 retorts would generate 86,778 feet per diem, and it follows that the 52 retorts now set could generate upwards of 167,000 feet per diem; but, as it is necessary to reserve 15 per cent of the whole generating power to meet the contingencies of wear and tear, it follows that the available supply would be about 142,000 feet in 24 hours. As the retort-house contains provision for 213 retorts, it follows that the maximum capability of the works when completed will be (after allowing 15 per cent. for reserve) about 582,000 feet of gas per diem; equal in illuminating power to 1,012,680 feet of the gas ordinarily sold in this metropolis. And here I would remark that the other arrangements on the works are fully adapted to the supply of the immense volume above named. I use the term immense, not so much in reference to the absolute volume, as to the comparatively small space occupied by the works, and the capital expended upon them. In my original report the maximum capability was estimated at 121,523,750 cubic feet, and the cost of the works was not to exceed the sum of £34,913; whereas the maximum capability of the Kensal-green works will be 212,430,000 feet per annum (equal to 369,628,200 of ordinary gas, while the cost of those works will not, I think, exceed £40,000.* Referring to the experimental results reported upon by one of your proprietors to the Leeds section of shareholders on the 1st ult., it will be most gratifying to observe that the reports of Drs. Leeson and Miller are fully borne out, and that the Western Company's gas † is 74 per cent. superior in illuminating power to any gas now supplied in London, and that it is 34 per cent. superior to that produced from Scotch cannel coal, upon which the statements in my original report were based. In addition to the gas itself the products of manufacture, coke, tar, and ammoniacal liquor, must be taken into consideration. The coke is of so superior a quality, compared with that obtained from other cannel coals, as to materially increase the profits assumed on that item in my original report; and I shall not be surprised if the secondary products of tar, naphtha, and creosote, should prove to be of greater value than such products usually are, as it is very certain that they are materially modified by the use of the regenerators, or auxiliary retorts. Although the present supply of gas may be considered as the minimum, still it is gratifying to know that the arrangements for condensing, purifying, storing, and regulating, are suited to the maximum capability, hence the investment in this department will cease so soon as No. 2 gasholder and the gas regulators are completed, which will be in about three weeks from this time. The retorts will, of course, be ordered and fixed as the demand for gas may require. The duration of each retort, or more properly the volume granted by each, has not yet been ascertained; but I have every reason to believe that the wear and tear will be considerably less than in any of the metropolitan establishments, owing to the absence of carbonaceous deposition—an advantage as novel as beneficial. The duration of the furnace-bars is also considerably prolonged; in fact, they remain in working condition as many months as those in other gas establishments last weeks. In addition to these important results other advantages might be adduced, such as the removal, by the use of steam, of all those impurities which cause the greatest nuisance upon all other large gas-works when the refuse lime is exposed to the action of the atmosphere, and of the smoke and vapours by the great efficiency of the ventilating chimney-shaft."

Blind Founders.—The following tenders were lately sent in to the Southampton Water Commissioners for the supply of 500 yards of five-inch pipes, 500 yards of three-inch do., 1 five-inch sluice-cock, 15 five-inch and 15 three-inch branches, to be delivered, free of expense, in Southampton:—

Haigh Foundry Co.	£234 10 0
J. Beaumont	183 18 6
Charles Perkins	175 4 4
Andrew Scott	173 1 3
M. and W. Grazebrook	170 15 0
James Oakes and Co.	169 11 6
T. H. Hood	166 10 0
—— Godden	163 1 5
Summers, Grove, and Co.	162 19 0
Bailey, Pegg, and Co.	162 9 0
J. Abbott and Co.	159 0 0
—— Colson	155 0 0
Francis Ford	147 10 0
Thomas Edwardes	147 7 7
Michael Kelly	146 15 0
Lynch White	145 15 0
Bailey and Co.	145 5 0
Cottam and Hallen	144 3 6
John Barlow	139 0 0
W. Newnham	113 0 0
Raymond, Burn, and Co., Newcastle-on-Tyne	64 6 0

whose tender, being the lowest, was accepted.

* These calculations assume that the quantities of gas daily supplied by a gas work are *equal* during the whole 365 days of the year, as 582 × 365=212,430. How far this extraordinary result may be the case with the work in question it scarcely becomes us to inquire, but we cannot allow such a statement to pass without protesting against its being deemed universally exact. Indeed, our own experience would lead us to believe that a London gas work of which the *maximum* manufacturing power was 582,000 cubic feet per day would scarcely be able to supply 120,000,000 feet per annum, instead of the 212,430,000, which the above calculations assume. Assertions like these should be carefully weighed before being promulgated, as we perceive that the directors assert in their report, "*that the works are on a scale to furnish 212,430,000 cubic feet of gas per annum, which at 8s. per 1000 feet would produce a rental of £84,972!! per annum.*" Such gentlemen have yet to learn their trade.

† From Ramsay's Newcastle Cannel coal.

IRISH MANUFACTURE.

JAMES GRAY and CO. continue to make every description of FIRE-BRICKS, TILES, and BLOCKS used in setting Retorts, all of the very best fire clay.

Irish Gas Companies can be supplied with as cheap and good an article, manufactured in their own country, as any they can import.

Fire-clay and Brick Works, Coal Island, near Dungannon, county of Tyrone, May 28, 1849.

N.B. Flooring, Ridge, and Oven Tiles, Water Pipes, Flue Linings, &c. &c.

THE MOST PERFECT DRY GAS METER.

N. DEFRIES, Engineer, Inventor and Patentee, 10, Hampstead-road, and 67, St. Martin's-lane, London, having, by the SALE of nearly 30,000 METERS, established, beyond all doubt and precedent, their unequalled character, begs to direct the attention of the Gas Companies, the Gas Fitters, and the Public, to the following particulars:—That nearly 30,000 are now in action; that the powerful Chartered Gas Company have more than 6000 alone in use; that he has recently constructed, upon the order of the above Company, a Meter for the New Houses of Parliament, calculated to pass 10,000 feet of gas per hour, and to supply 2000 burners, and which has been pronounced by all the daily and weekly journals and the first men of the day to be the most magnificent measuring machine ever constructed by human hands; that a Meter of almost equal dimensions was recently constructed by him, also upon the order of the Chartered Gas Company, for the Italian Opera-house, Covent-garden, calculated to pass 6000 feet of gas per hour, and to supply 1500 burners, and which works with only the loss of one-half a tenth pressure; that he has supplied many large Meters to Government Offices, Public Companies, Club-houses, Churches, Chapels, Theatres, &c., too numerous to mention; that two large Meters have been in action at the Thames Tunnel night and day for five years, being equal to forty years of ordinary use; and the registration, being recorded daily, offers the most incontestable proof that, on the score of precision and durability, they stand unequalled; that these Meters have been proclaimed by the first scientific gentlemen of the day to be the surest tests that could be made; and eight years' flattering experience has proved them to be wholly free from all the evils and annoyances attendant upon the water meter, of the truth of which the annexed testimonial bears striking evidence:—

"Woolwich Protective Consumers' Gas Company,
"Jan. 15, 1849.

"Sir,—I have great pleasure in giving my testimony to the excellence of the dry meter, and think there is no comparison between that and the water meter, as regards the value of the two instruments. Experience confirms this opinion. We have had several hundreds of yours in work for nearly five years with the utmost success. They are perfect in registration, have no undulation in the lights, are free from the action of frost, and, above all, require no attention when once fixed. I have taken down several that have been at work for the above time, and, on testing them, found they registered as correctly as when first made. I am confident I cannot say too much in praise of dry meters; and that all gas proprietors who furnish pure gas would find it to their interest to use them only.

"J. THOMAS, Superintendent Engineer.
"To Mr. Defries."

Experimental Glazed Meters may be seen in action at
Mr. Faraday's, Wardour-street, Soho.
— Warris, Wardour-street, Soho.
Messrs. Dean and Dray, Arthur-street, London-bridge.
Mr. Baker, Manor-house, King's-road, Chelsea.
Institution of Civil Engineers, 25, Great George-street.
Royal Polytechnic Institution, Regent-street.
The Bank of England,
Mr. Boccius, Patent Light Office, 14, Duke-st., Adelphi.
And at the following Gas Fitters and Lamp Manufacturers:—
Mr. Deville, 367, Strand.
Messrs. Debaufer and Son, Creed-lane, Ludgate-hill.
— Dowson, 69, Welbeck-street.
— Brocklehurst and Co., 177, High Holborn.
— Huxley and Herlot, 16, Castle-street, Long-acre.
Mr. Hodder, 9, Tottenham-court-road,
— Kitchen, 60, Crawford-street, Marylebone.
— Rickets, 5, Agar-street, and 14, Threadneedle-st.
— Slater, 23, Denmark-street, Soho.
— Baker, Manor-house, Chelsea.
— Shirley, 3, Back-road, Ratcliff-highway.
— Gardner, 453, Strand.
— Carter, 41, Exeter-street, Portland-market.
— Petitt and Son, 17, Brook-street, New-road.
— Verity, 31, King-street, Covent-garden.
— Rothwell, 20, Cleveland-street.
— Williams, 14, Sloane-square, Chelsea.
— May, 21, Berwick-street.
— Edgar, 71, Marylebone-lane.
— Pilkington, 26, Great Marylebone-street.
— Greening, 15, West-street, Seven-dials.
— Harris, Wardour-street, Soho.
— Edgar Parkes, Fleet-street.

In conclusion N. Defries begs to say, that he has been extensively patronized by all the London and by most of the Provincial Gas Companies; that any or all of them will on application testify to the correctness, durability, and value of his Meters; that these Meters have been successfully introduced to the Continent, to America, and many of the Colonies; that they have proved themselves to be unvarying, correct, and durable instruments, and may be obtained at a small expense per annum of all Gas Companies who supply Meters to their customers; that they combine safety and economy, as no water is used, and require no attention when once fixed.

Testimonials, Lists of Prices, and every information may be obtained at either Factory, 10, Hampstead-road, or 67, St. Martin's-lane.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

CROLL and GLOVER, Patent Dry Gas Meter Manufacturers, Suffolk-street, CLERKENWELL-GREEN, LONDON, beg respectfully to call attention to the following extracts from testimonials in favour of their Meters. The respectability of the parties will be esteemed by all acquainted with gas matters as affording the most indubitable evidence of the superiority of their Patent Dry Gas Meters, proving that gas companies and gas consumers may rely on them for a just and unvarying registration, durability, and the absence of all trouble arising from condensation of water in the fittings, and the impossibility of their being stopped by freezing in the coldest climates.

CROLL and GLOVER take this opportunity of remarking to Gas Companies that the apprehension so generally entertained by them, viz., that if Dry Meters were introduced into their districts their Stock of Water Meters would be thrown on their hands, while this has not happened even with those Gas Companies who have for years back purchased none but Dry Meters; this apprehension ought to lead Gas Companies to a speedy investigation into the merits of Dry Meters, so that they may not, year after year, be increasing their stock of Water Meters, which they themselves apprehend must one day be thrown out of use.

CROLL and GLOVER humbly think that the following extracts prove that the merits of their Meter are entitled to prompt attention of Gas Companies.

Almost all the testimonials bear the date of November, 1848.

EXTRACTS.

"The Chartered Gas Company have purchased and fixed up above 2,000."—GEORGE LOWE, *Civil Engineer, F.R.S., &c., Consulting Engineer to the Chartered Gas Light and Coke Company, London.*

"We have in this district from seven to eight hundred, and are daily fixing more."—F. I. EVANS, *Superintendent at Chartered Gas Light and Coke Company's Station, Brick-lane.*

"I invariably found the flames perfectly steady, and the gas accurately measured."—A. H. STILL, *Superintendent at Chartered Gas Light and Coke Company's Station, St. Luke's.*

"I beg to state that out of 800 Meters of the square form, and anti-corrosive metal, I find only twenty have been entered in our return-book, chiefly for broken index-glasses. The company are continuing to purchase and fix up your Meters in considerable quantities."—WILLIAM MONRO, *General Superintendent and Engineer of the Phœnix Gas Light and Coke Company, London.*

"I have much pleasure in stating that the Meters we have received with your last improvements have given great satisfaction."—JOHN AIRD, *Superintendent of the Phœnix Gas Light and Coke Company's Station, Greenwich.*

"I have had some of them in use for nearly four years. In certain situations exposed to the influence of the climate I have found them to be the only description fit for use, as well as in confined and overheated situations, where the water in the Water Meters is acted upon by evaporation."—ROBERT LAING, *Secretary and Superintendent of the Independent Gas Light and Coke Company, London.*

"Having had, in all, up to the present time under my inspection 609 Meters of your manufacture, a very good opportunity has thus been afforded me of judging of their merits. The result of my observation in respect of registration and steadiness of light is, that the Meters have given perfect satisfaction."—D. METHVEN, *Engineer and Superintendent to the Commercial Gas Light and Coke Company, London.*

"The advantages which I have found attending the use of your Dry Gas Meters, in preference to the Wet Meters, are so important, that nothing would induce me to return to the use of the latter. As Station Meters yours have the additional advantage, that there is no water-line to attend to, or to be subject to neglect."—CHARLES DIXON, *Engineer of the Chichester Gas Light and Coke Company.*

"I have also had sufficient opportunity of knowing that they are not affected by the most severe frost, nor where one of them was fixed did I ever know of condensation taking place in the inside gas fittings of any premises."—SAMUEL PONTIFEX, *Manager, Winchester Gas Light and Coke Company.*

"We are now using your Meters solely."—CHARLES PURVES, *Manager, Gas Works, Gosport.*

"They are a substantial and good article, of superior workmanship and material; they do their work exceedingly well and, after being once fixed, they occasion no further trouble. I assert that they do not alter in their measurement, as does the Water Meter."—J. THOMAS, *Manager, Consumers' Protective Gas Light Company, Woolwich.*

"Previous to using them I held theoretical objections, which I can now say have been removed, and their superiority as an instrument of unvarying measuring capacity has been fully established."—EDWARD H. THORMAN, *Superintendent of the West Ham Gas Company.*

"I have delayed giving my opinion of your Meters until I had had another winter's experience; and, notwithstanding some of them were placed in the open air, not one became fixed. We have had a short winter, but the frost is very severe."—P. T. W. de TIMMERMAN, *Director of the City of Leyden Gas Works.* January 26, 1849.

Station Meters, Station Governors, Pressure Registers, Experimental Meters, and Specific Gravity Apparatus.

CANNEL COAL.

JOHN HENDERSON and CO. respectfully invite the attention of Managers of Gas-works to the annexed Report by Professor Fyfe upon their PARROT or CANNEL COAL, which continues to be shipped at Burntisland to any extent. Price 10s. per ton, f. o. b.

Apply to Messrs. R. W. KENNARD and Co., 67, Upper Thames-street, London; or to JAMES CONNEL, Shipping Agent, Burntisland.

Lochgelly Coal and Iron Works, by Burntisland, March, 1849.

REPORT ON THE VALUE OF LOCHGELLY PARROT COAL FOR THE MANUFACTURE OF GAS.

In the trials made with this Coal 14 lbs. of coal were carbonized. The quantity of gas given off was estimated by meter; the illuminating power of the gas was ascertained by the chlorine test, the durability by meter—consuming the gas with a single jet of 1·33 of an inch diameter, and with a 5-inch flame. The specific gravity was taken in the usual way.

The following are the results, being the average of several trials:—

Cubic feet of gas ..... 9123· per ton of coals.
Illuminating power of gas ... 14·5 candles.
Durability ..... 65·30 minutes.
Specific gravity of gas ..... 567·

The Lochgelly Coal may be considered as a fair average quality of Parrot Coal; for, though it is beneath the Lesmahago Coal, not only as regards the quantity of gas afforded, but also as to the illuminating power and durability of the gas, yet it is equal to the average quality of the Parrot Coal of the Lothians and of Fifeshire.

It is much more valuable than the English Caking Coal and English Parrot Coal now in general use, in regard to their relative value for the amount of light afforded by the combustion of their gases, as the following table will show:—

COALS.	Cubic Feet of Gas from Ton of Coal.	Illuminating Power of Gas by Chlorine Test.	Durability of Gas with Jet of 1·33 of an Inch.		Comparative Value of the Coals according to the Light afforded by the Consumpt of their Gases.	
			Min.	Sec.		
English Caking Coal	8000	4·33	40	24	1·	—
English Parrot ditto	9500	7·6	44	0	...	1·
Lochgelly ditto	9123	14·5	65	30	6·18	2·71

Accordingly, the Lochgelly Coal is, on an average, more than six times the value of English Caking Coal, and more than twice and a half as valuable as the average of English Parrot Coal, for affording light by the combustion of their gases.

A ton of Lochgelly Coal leaves 1200 lbs. of coke.

In the above estimate the value of the ammoniacal liquor, tar, &c., is not taken into account.

A. FYFE, Professor of Chemistry,
Feb. 28, 1849. King's College University, Aberdeen.

BRYMBO Iron Works, Foundry, and COLLIERY, near WREXHAM, NORTH WALES. Shipping Ports:—Birkenhead, and Saltney, near Chester, on the river Dee.

Report of Experiments made at the Wrexham Gas Works on the 3rd, 4th, and 5th, and at the Chester Gas Works on the 6th and 7th, of August, 1848, upon the Gas Coals raised at the Brymbo Colliery, by Mr. A. WRIGHT, Gas Engineer, London.

At one work Fire-clay Retorts were used at a high temperature; at the other Iron Retorts at a moderate temperature; the results are, therefore, given separately, Clay and Iron being given as synonymous with high and moderate heats.

TWO YARD COAL.

CLAY RETORTS, 2 cwt. charge. 5½ hours.

Per Ton:
Gas Cubic Feet 8880.
Sp. Gr. first of Charge ·596 } Mean Sp. Gr. 463. 5 feet per hour, equal to 15 candles.
middle „ ·462 }
last „ ·300 }
Gas by Weight 294·94 lbs.
Tar 70 „
Coke 12 cwt. 22 lbs.

The Coke of very superior quality.

POWELL COAL.

CLAY RETORTS, 2 cwt. charge. 5 hours.

Per Ton:
Gas Cubic Feet 10165.
Sp. Gr. first of Charge ·586 } Mean Sp. Gr. 459. 5 feet per hour, equal to 14·88 candles.
middle „ ·456 }
last „ ·428 }
Gas by Weight 337·8 lbs.
Tar 70 „
Coke 11 cwt. 56 lbs.

POWELL COAL.

IRON RETORTS, 1½ cwt. charge. 5 hours.

Per Ton:
Gas Cubic Feet 8250.
Sp. Gr. first of Charge ·560 } Mean Sp. Gr. 470, equal to 15·3 candles, at 5 feet per hour.
middle „ ·465 }
last „ ·300 }
Gas by Weight 295·6 lbs.
Tar 105·0 „
Coke 11 cwt. 56 lbs.

This Coal yields Gas very easily, of a good quality, and at a moderate heat. The Coke is also, though small, very good. It is therefore well fitted for those who use Iron Retorts and require a superior Gas.

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